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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/917,406	07/26/2001	Andrea Giovanni Cigada	853063.493	1065
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SEED INTELLECTUAL PROPERTY LAW GROUP PLLC			VU, QUANG D	
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SUITE 6300			PAPER NUMBER	
SEATTLE, WA 98104-7092			2811	

DATE MAILED: 01/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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**Office Action Summary**

Application No.

09/917,406

Applicant(s)

CIGADA ET AL.

Examiner

Quang D. Vu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 October 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5, 7 and 16-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,665,296 to Jain et al. in view of US Patent No. 6,106,259 to Lee et al.

Regarding claim 1, Jain et al. (figures 1, 3) teach a structure comprising:

a frame (10); and wherein the frame includes a through hole (38).

Jain et al. differ from the claimed invention by not showing air vent. However, Lee et al. (figure 6A) teach air vent (28), which is formed between the upper mold (21) and the lower mold (22). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of Lee et al. into the device taught by Jain et al. because it is desirable to remove the air in the cavity of the mold. The combined device shows a mold having at least one air vent (Lee et al.; 28) from which the resin can seep out of during the injecting phase into the mold, the air vent being positioned between an upper and a lower surface of the frame, wherein the frame (Jain et al.; 10) includes a through hole (Jain et al.; 38) placed adjacent to an outlet of the air vent so that when the resin has solidified it forms a flash which is in coherence with one of the upper and lower surfaces of the frame.

Regarding claim 2, the combined device shows the other shapes can be used for the hole (Jain et al.; column 2, lines 47-50). The combined device differs from the claimed invention by not showing the hole has an ellipsoidal section. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the hole has an ellipsoidal shape in order to provide the least amount of fluid resistance.

The combined device differs from the claimed invention by not showing the minor diameter dimension of the hole shorter than the diameter of the air vent. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the minor diameter dimension of the hole shorter than the diameter of the air vent in order to provide molding material in the cavity of the mold. Furthermore, it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 3, the combined device shows the other shapes can be used for the hole (Jain et al.; column 2, lines 47-50). The combined device differs from the claimed invention by not showing the hole has a circular section. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the hole has an ellipsoidal shape in order to provide the least amount of fluid resistance.

The combined device differs from the claimed invention by not showing the diameter dimension of the hole equal or shorter than that of the air vent. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the diameter dimension of the hole equal or shorter than that of the air vent in order to provide molding material in the cavity of the mold. Furthermore, it has been held that discovering an optimum

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value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F2.d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 4, the combined device differs from the claimed invention by not showing the air vent, in combination with the hole having an ellipsoidal section, gives rise to a flash of resin on the upper surface of the frame and to a flash of resin on the lower surface of the frame, with an overall combined thickness equal to or exceeding 1 mm. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the air vent, in combination with the hole having an ellipsoidal section, gives rise to a flash of resin on the upper surface of the frame and to a flash of resin on the lower surface of the frame, with an overall combined thickness equal to or exceeding 1 mm in order to provide an adhesion between the upper and lower layers in the device. Furthermore, it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F2.d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 5, the combined device differs from the claimed invention by not showing the hole with ellipsoidal section is positioned at a distance of more than 1 mm from the air vent. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the hole with ellipsoidal section is positioned at a distance of more than 1 mm from the air vent in order to provide molding material in the cavity of the mold. Furthermore, it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F2.d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 7, the combined device differs from the claimed invention by not showing the hole with circular section is positioned at a distance of more than 1 mm from the air

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vent. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the hole with circular section is positioned at a distance of more than 1 mm from the air vent in order to provide molding material in the cavity of the mold. Furthermore, it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 16, Jain et al. (figures 1, 3) teach a semiconductor lead frame (10) for an integrated circuit having a molded portion (50), wherein the molded portion (50) having one or more flashing portions (a portion of the encapsulant formed on the upper surface and lower surface of [50]) formed at peripheral extrusion areas (the edge portion of the package), the lead frame comprising:

a conductive skeleton (a portion of leadframe [10]) having a support surface and a plurality of conductive strips (the leadframe [10] has strips of lead [16]) on the surface.

Jain et al. differ from the claimed invention by not showing air vent. However, Lee et al. (figure 6A) teach air vent (28), which is formed between the upper mold (21) and the lower mold (22). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of Lee et al. into the device taught by Jain et al. because it is desirable to remove the air in the cavity of the mold. The combined device shows the conductive strips defining an air vent zone of the surface that is structured for placement adjacent to one of the peripheral extrusion areas, the air vent zone including a hole in the surface for receiving a portion of one of the flashing portions.

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Regarding claim 17, the combined device shows the hole (Jain et al.; 38) formed in a surface of the conductive strip (Jain et al.; 16) facing away from the molded portion (Jain et al.; 50).

Regarding claim 18, the combined device shows the hole (Jain et al.; 38) is aligned with the flashing portion (a portion of the encapsulant formed on the upper surface and lower surface of [50]). (Jain et al.; column 2, lines 42-46).

Regarding claim 19, the combined device shows the hole (Jain et al.; 38) is a passage through the conductive strip.

Regarding claim 20, the combined device shows the other shapes can be used for the hole (Jain et al.; column 2, lines 47-50). The combined device differs from the claimed invention by not showing the hole is substantially circular in shape. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the hole has an ellipsoidal shape in order to provide the least amount of fluid resistance.

Regarding claim 21, the combined device shows the other shapes can be used for the hole (Jain et al.; column 2, lines 47-50). The combined device differs from the claimed invention by not showing the hole is substantially ellipsoidal in shape. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the hole has an ellipsoidal shape in order to provide the least amount of fluid resistance.

Regarding claim 22, the combined device shows the hole (Jain et al.; 38) is spaced a predetermined distance away from air vent of the air vent zone.

Regarding claim 23, the combined device shows a semiconductor device mounted on the support surface of the conductive skeleton (Jain et al.; lead frame [10]); wherein the molded

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portion (Jain et al.; 50) is formed over the semiconductor device, the one or more flashing portions extending into the hole (Jain et al.; 38).

Regarding claim 24, the combined device shows the one or more flashing portions (Jain et al.; a portion of the encapsulant formed on the upper surface and lower surface of [50]) extend across a surface of the conductive strip (Jain et al.; a first surface of the flashing portion is on the left of the hole [38]) facing away from the molded portion (Jain et al.; 50).

Regarding claim 25, the combined device shows the hole (Jain et al.; 38) is a passage through the conductive strip; and the one or more flashing portions extend through the passage.

Regarding claim 26, the combined device shows the one or more flashing portions (Jain et al.; a portion of the encapsulant formed on the upper surface and lower surface of [50]) includes a bottom portion on a surface of the conductive strip facing away from the molded portion.

3. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jain et al. in view of Lee et al., and further in view of US Patent No. 5,914,531 to Tsunoda et al.

Regarding claim 6, the disclosures of Jain et al. and Lee et al. are discussed as applied to claims 1-5 and 7 above.

The combined device differs from the claimed invention by not showing a flash only on the upper surface of the frame. However, Tsunoda et al. (figure 30B) teach a flash (a portion of the resin [14]), which is formed only on the upper surface of the frame (15). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of Tsunoda et al. into the device taught by Jain et al. and Lee et al. because it is desirable to increase the adhesion between the upper mold and the lead frame.



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The combined device differs from the claimed invention by not showing the flash having a thickness from 20 to 25 micrometer. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the flash having a thickness from 20 to 25 micrometer in order to provide an adhesion between the upper mold and the lead frame.

Furthermore, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

4. Claims 8-12 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,635,220 to Izumi et al. in view of US Patent No. 6,106,259 to Lee et al.

Regarding claim 8, Izumi et al. (figures 3-5) teach an integrated circuit package, comprising:

a semiconductor device (309);

a molded portion (a portion of [111]) formed around the semiconductor device (309) and having an injection area (cavity [108, 109]) through which resin (111) was injected to form the molded portion; and

a lead-frame (301) external to the molded portion (a portion of [111]) and having a hole (308) and the flashing portion (a portion of the resin [111] formed in the hole [308] and formed in the inlet of the upper mold [102] and the lower mold [101]) at least partially filling the hole (308).

Izumi et al. differ from the claimed invention by not showing the vent area. However, Lee et al. (figures 6A-C) teach the air vent area (28), which is formed between the upper mold

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(21) and the lower mold (22). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of Lee et al. into the device taught by Izumi et al. because it is desirable to remove the air in the cavity of the mold. The combined device shows a flashing portion of molded material extruded from air vent area of molded portion and the air vent area being spaced apart from the injection area and a leadframe having a hole adjacent to the air vent area.

Regarding claim 9, the combined device shows the hole (Izumi et al.; 308) is formed on an axis passing through the flashing portion.

Regarding claim 10, the combined device shows the hole (Izumi et al.; 308) is a through-hole extending completely through the lead-frame (Izumi et al.; 301).

Regarding claim 11, the combined device shows the flashing portion at least partially filling the hole (Izumi et al.; 308) includes a first portion formed on a first surface of the lead-frame (Izumi et al.; upper surface of the leadframe [301]) and a second portion formed on a second surface of the lead-frame (Izumi et al.; lower surface of the leadframe [301]).

Regarding claim 12, the combined device shows the hole (Izumi et al.; 308) is a recess formed in the lead frame (Izumi et al.; 301).

Regarding claim 27, the combined device shows the injection area (Izumi et al.; cavity [108, 109]) is at a first corner of the molded portion and the vent area (Lee et al.; air vent [28]) is at a second corner, opposite to the first corner of the molded portion.

5. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Izumi et al. in view of Lee et al., and further view of US Patent No. 5,665,296 to Jain et al.

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The disclosures of Izumi et al. and Lee et al. are discussed as applied to claims 8-12 above.

Regarding claim 13, the combined device differs from the claimed invention by not showing the hole is substantially round in shape. However, Jain et al. teach the other shapes can be used for the hole (Jain et al.; column 2, lines 47-50). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of Jain et al. into the device taught by Izumi et al. and Lee et al. in order to provide the least amount of fluid resistance.

Regarding claim 14, the combined device differs from the claimed invention by not showing the hole is substantially elliptical in shape. However, Jain et al. teach the other shapes can be used for the hole (Jain et al.; column 2, lines 47-50). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of Jain et al. into the device taught by Izumi et al. and Lee et al. in order to provide the least amount of fluid resistance.

Regarding claim 15, the combined device shows the hole (Izumi et al.; 308) is spaced a predetermined distance away from the extrusion of the flashing portion from the molded portion.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-27 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quang D. Vu whose telephone number is 571-272-1667. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

qv  
January 13, 2005



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